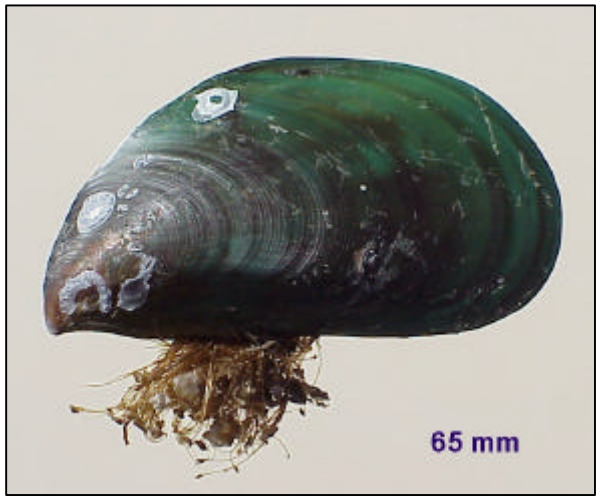
NONINDIGENOUS SPECIES INFORMATION BULLETIN: Green mussel, *Perna viridis* (Linnaeus, 1758) (Mollusca: Mytilidae)

IDENTIFICATION: Mussels of this species can reach 150 mm (about 6"). Shell length is approximately twice the height. Young mussels are a brilliant green while the adults are darker green to brown.

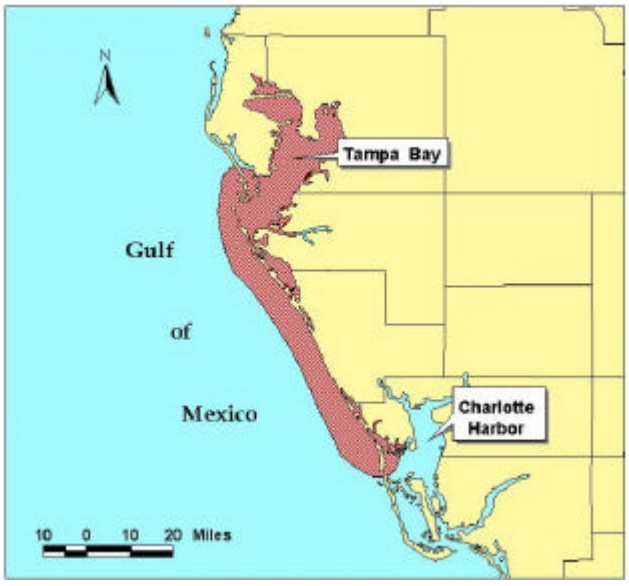
NATIVE RANGE: Tropical marine and estuarine waters of the Indo-Pacific region of Asia, from the Persian Gulf to the South China Sea.



LIFE HISTORY: Peak spawning activities normally occur once a year. Eggs and sperm are released into the water. Fertilized eggs develop into free-swimming larvae within a day. They remain free-swimming for 2-3 weeks, after which they settle onto a hard substrate and attach to the surface using a cluster of thread-like structures called a byssus. At 2-3 months of age or approximately 20 mm in length, they are sexually mature. Life spans is about 3 years. Densities as high as 35,200/m^2 have been reported near Hong Kong.

HABITAT: This sessile bivalve naturally inhabits estuarine waters where the salinity ranges from 27-33 PSU, lower limit is about 16 ppt. Optimal temperature range is 26-32^{o}C but some can survive for short periods from 10-35^{o}C. They feed on phytoplankton, zooplankton, and detritus filtered from the water.

NONINDIGENOUS OCCURRENCES: This species has been intensively cultured as a protein source for human consumption and has been distributed to many islands outside its native range in the South Pacific over the past several decades. Green mussels were first found outside their native range in waters surrounding the Caribbean island of Trinidad in 1990 and later along the nearby coast of Venezuela in 1993. The first known occurrence of the green mussel in the United States was in Tampa Bay, Florida, during the summer of 1999 where they were discovered clogging the inside of cooling water intake tunnels at several power plants. Their current known distribution is limited to Florida, including Tampa Bay (Hillsborough and Old Tampa bays) and from Johns Pass in St. Petersburg south to Boca Grande in the Gulf of Mexico. Most likely, currents in the Gulf will continue to spread the green mussel along the coast, south of Tampa Bay towards the Florida Keys.



Red shading represent the current range of green mussel. *Perna viridis,* in Florida and the US.

Department of the Interior
U.S. Geological Survey
Florida Caribbean Science Center
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May 15, 2001
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MEANS OF INTRODUCTION: Possible ways of introduction include ballast water dumping from ocean-going vessels carrying planktonic larvae, ship hull fouling, and intentional release. There are no known commercial aquaculture operations in the United States.

IMPACTS: Green mussels are biofoulers of power plants in India and have already impacted several power plants in Florida by fouling the surface of intake condenser tunnels. They are also notorious for fouling navigation buoys in China where biomass has reached up to 72 kg/m^2. Potential negative impacts include competition with the oyster fishery, displacement of native mussels, and carriers of diseases and parasites harmful to native species.

CONTROL and MANAGEMENT: To date, there has been no successful eradication of marine invertebrates in the United States. The green mussel is likely to spread until it reaches its lower temperature tolerance. In closed environments, such as power plants, mechanical or chemical control methods can be employed to reduce or eliminate this species where problems occur. To eliminate the source of many introductions, antifouling paints and ballast water management are being researched. Large and small boats coming from infested waters should be inspected before proceeding to uninfested waters.

If you have collected or observed this species, or know of someone who has, please call the **Nonindigenous Aquatic Species Toll-Free Hotline, 1-877-STOP-ANS** and report the information. Or, report it using our website, **http://nas.er.usgs.gov/**.

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